Practicing for the Big One

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Washington Military Department, Emergency Management Division







Agenda

- The Threat
- National Preparedness
- Cascadia Rising
- Food for Thought
- Questions & Answers







The Cascadia Subduction Zone
Our "Big One"

The Explorer, Juan de Fuca, and Gorda Plates are being forced under the North American Plate

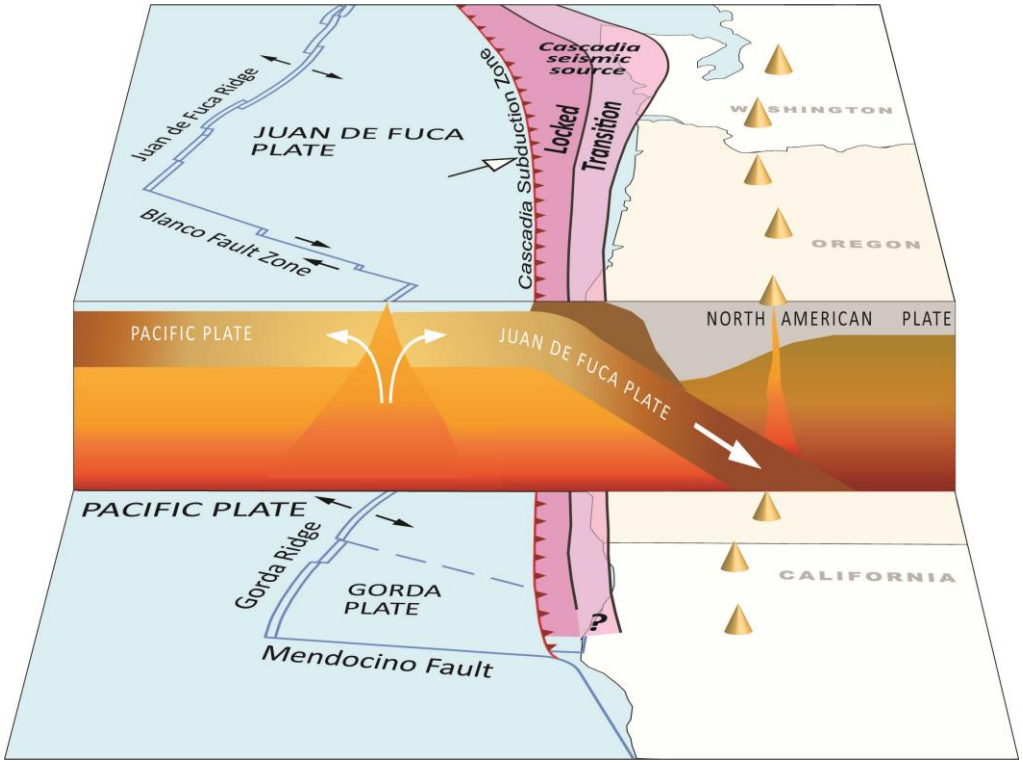
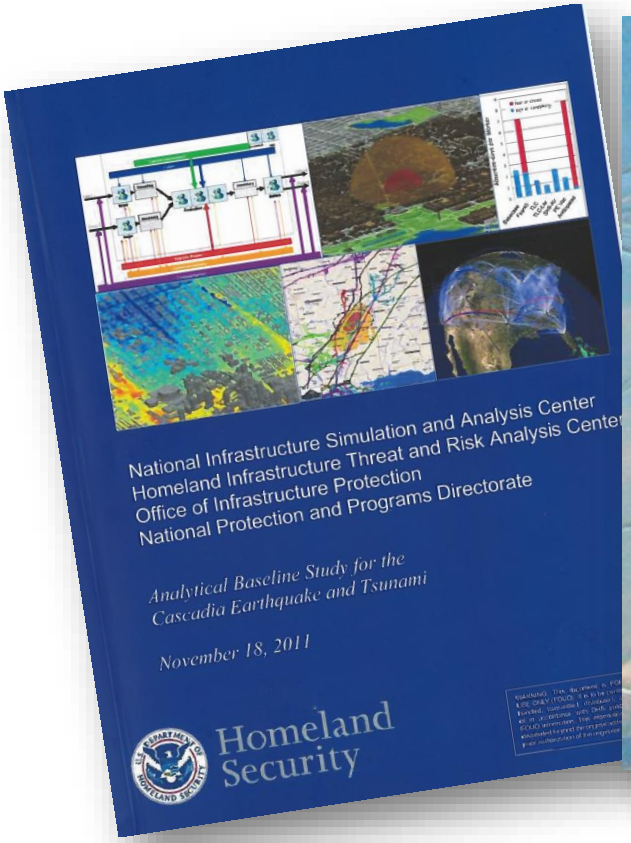
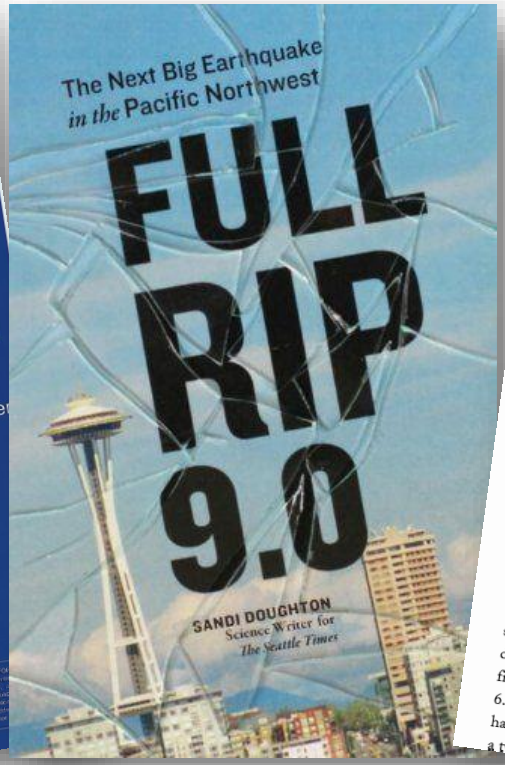


Image Source: Oregon Department of Geology and Mineral Industries

- 700 miles long (1,130 km)
- Last great rupture: January 26, 1700
- 500-year *average* recurrence
- Odds within next 50 years: **1 in 10**

More Information


National Infrastructure Simulation and Analysis Center
Homeland Infrastructure Threat and Risk Analysis Center
Office of Infrastructure Protection
National Protection and Programs Directorate
Analytical Baseline Study for the
Cascadia Earthquake and Tsunami
November 18, 2011
Homeland Security





ANNALS OF SEISMOLOGY | JULY 20, 2015 ISSUE

THE REALLY BIG ONE

An earthquake will destroy a sizable portion of the coastal Northwest. The question is when.

BY KATHRYN SCHULZ

When the 2011 earthquake and tsunami struck Tohoku, Japan, Chris Goldfinger was two hundred miles away, in the city of Kashiwa, at an international meeting on seismology. As the shaking started, everyone in the room began to laugh. Earthquakes are common in Japan—that one was the third of the week—and the participants were, after all, at a seismology conference. Then everyone in the room checked the time.

Seismologists know that how long an earthquake lasts is a decent proxy for its magnitude. The 1989 earthquake in Loma Prieta, California, which killed sixty-three people and caused six billion dollars' worth of damage, lasted about fifteen seconds and had a magnitude of 6.9. A thirty-second earthquake generally has a magnitude in the mid-sevens. A minute-long quake is in the high sevens, a two-minute quake has entered the eights, and a three-minute quake is in the

The next full-margin rupture of the Cascadia subduction zone will spell the worst natural disaster in the history of the continent.

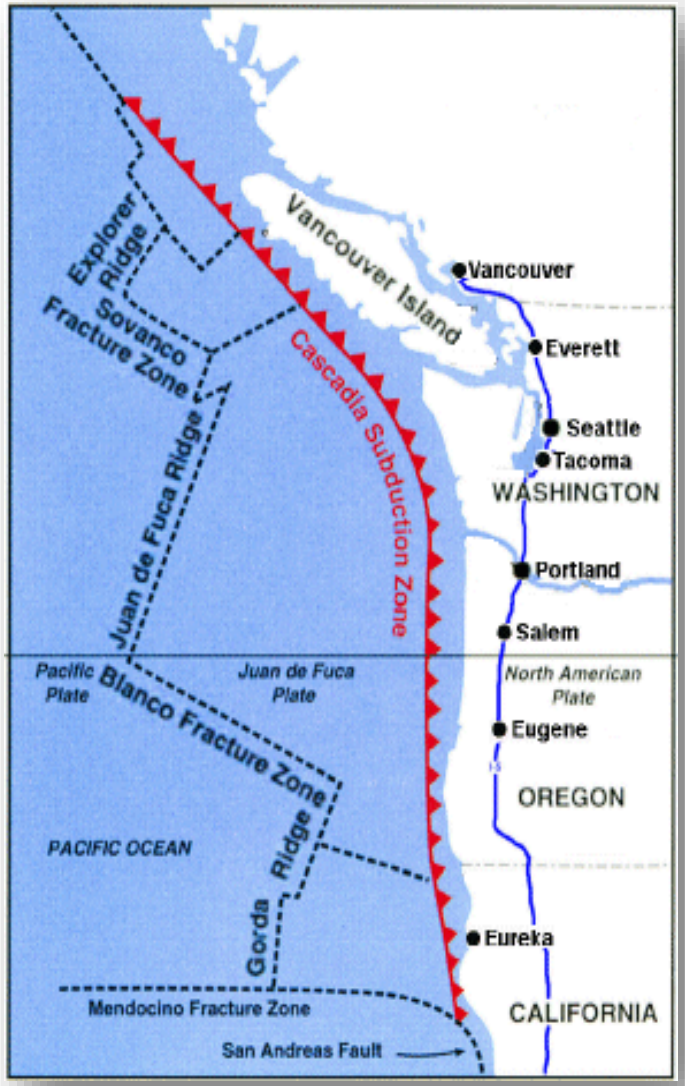
ILLUSTRATION BY CHRISTOPH NIEMANN; MAP BY ZIGGYMAJ / GETTY

Exercise Scenario

CSZ 9.0M Earthquake and Tsunami

Modelled impacts:

- Direct Impact to 3 States and British Columbia
- Complete rupture of the 800-mile Fault
- Impacts affecting over 140,000 square miles
- Ground shaking lasts up to 5 minutes
- Numerous aftershocks with several of M7.0+
- Modelled estimates: 1,100 fatalities from earthquake; 13,000 fatalities from tsunami; 24,000 injured.



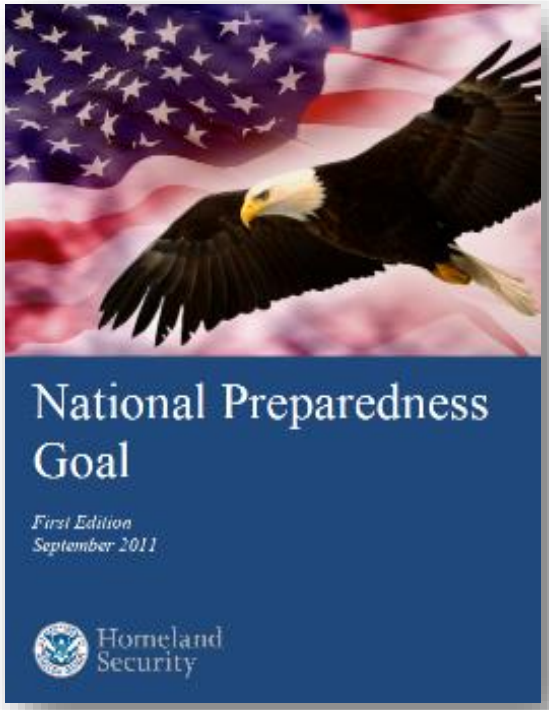







MIYAKO

National Preparedness Goal



"A secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk."

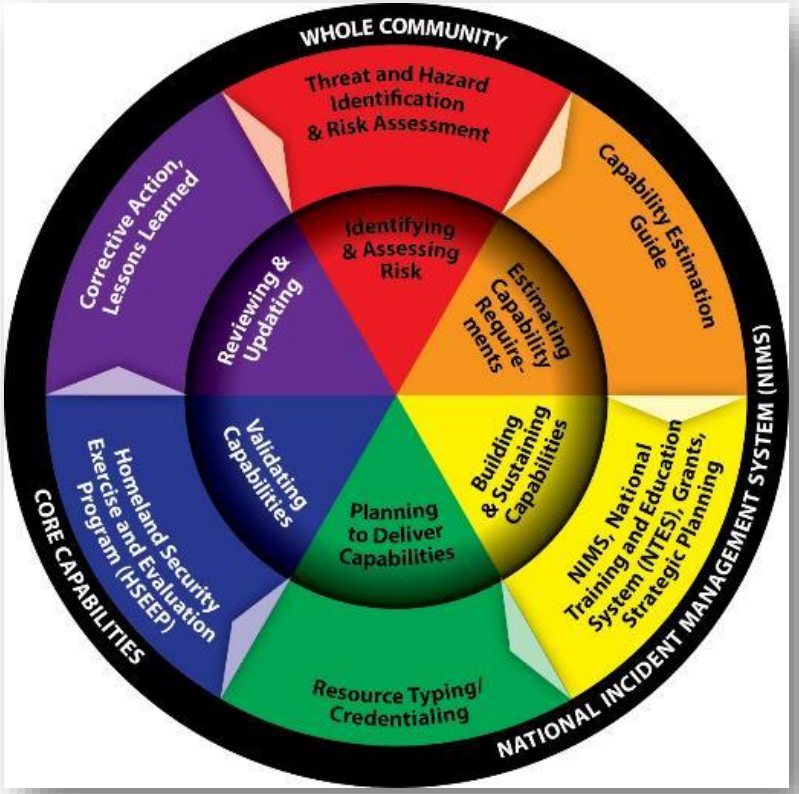
Mission Areas & Core Capabilities



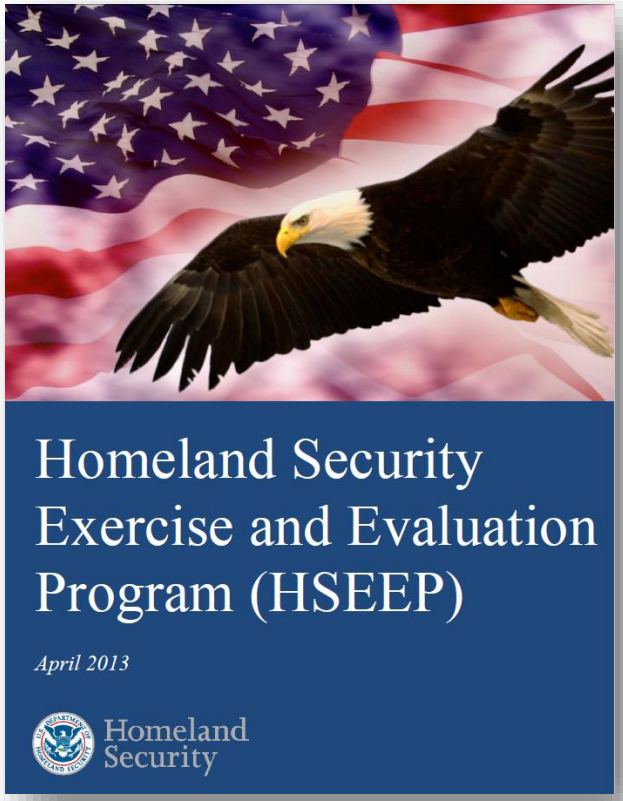
PREVENTION	PROTECTION	MITIGATION	RESPONSE	RECOVERY
Planning	Planning	Planning	Planning	Planning
Public Information and Warning	Public Information and Warning	Public Information and Warning	Public Information and Warning	Public Information and Warning
Operational Coordination	Operational Coordination	Operational Coordination	Operational Coordination	Operational Coordination
Forensics and Attribution	Access Control and Identity Verification	Community Resilience	Critical Transportation	Economic Recovery
Intelligence and Information Sharing	Cybersecurity	Long-Term Vulnerability Reduction	Environmental Response / Health and Safety	Health and Social Services
Interdiction and Disruption	Intelligence and Information Sharing	Risk and Disaster Resilience Assessment	Fatality Management Services	Housing
Screening, Search and Detection	Interdiction and Disruption	Threats and Hazard Identification	Infrastructure Systems	Infrastructure Systems
	Physical Protective Measures		Mass Care Services	Natural and Cultural Resources
	Risk Management for Protection Programs and Activities		Mass Search and Rescue Operations	
	Screening, Search and Detection		On-Scene Security and Protection	
	Supply Chain Integrity and Security		Operational Communications	
			Public and Private Services and Resources	
			Public Health and Medical Services	
			Situational Assessment	

National Preparedness System




WHOLE COMMUNITY
Threat and Hazard Identification & Risk Assessment
Capability Estimation Guide
NIMS, National Training and Education System (NTES), Grants, Strategic Planning
Resource Typing/ Credentialing
Homeland Security Exercise and Evaluation Program (HSEEP)
Corrective Action, Lessons Learned
Identifying & Assessing Risk
Estimating Capability Require-ments
Building & Sustaining Capabilities
Planning to Deliver Capabilities
Validating Capabilities
Reviewing & Updating
CORE CAPABILITIES
NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS)

Homeland Security Exercise and Evaluation Program (HSEEP)

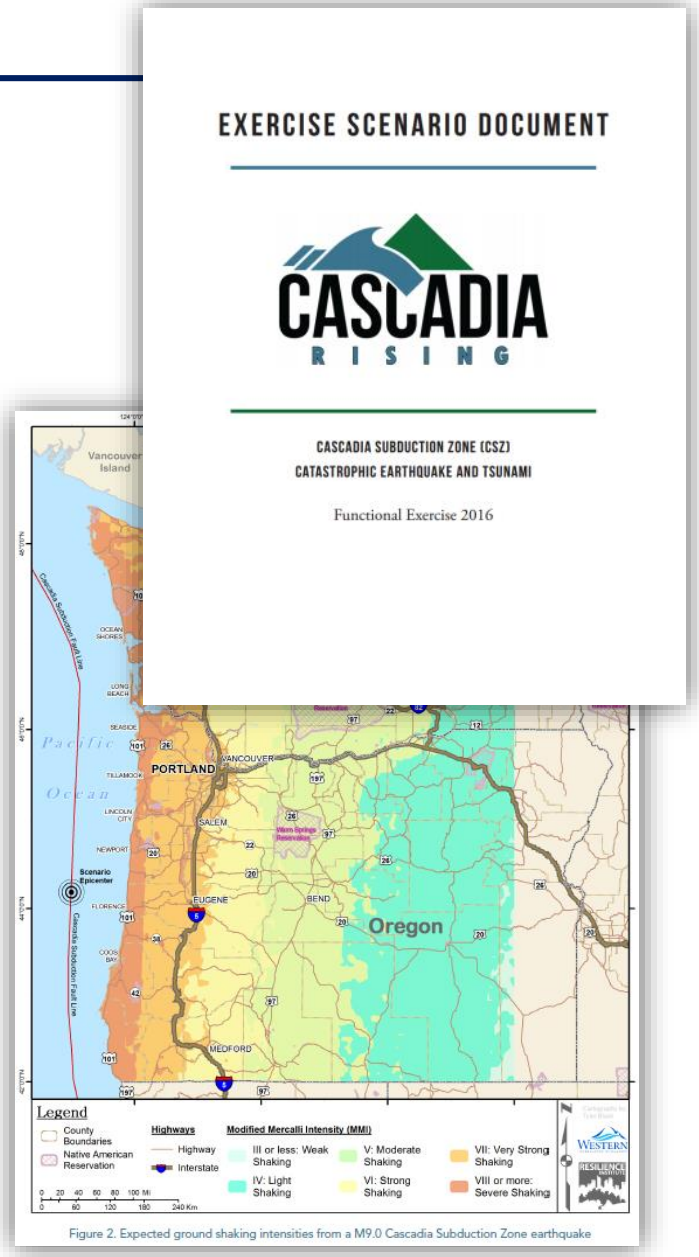


A common approach to exercise program management, design and development, conduct, evaluation, and improvement planning

Cascadia Rising 2016 Exercise

Scenario Document

- Foundation: Provides information on broad impacts to the built environment caused by scenario (CI facilities, buildings, etc.)
- Frames the problem and educates both players and exercise planners on the impacts, especially to the major critical infrastructures, caused by a CSZ earthquake. Covers Oregon *and* Washington.
- Published: January 2015
- Can be downloaded on the Cascadia Rising website at **http://www.fema.gov/cascadiarising2016**

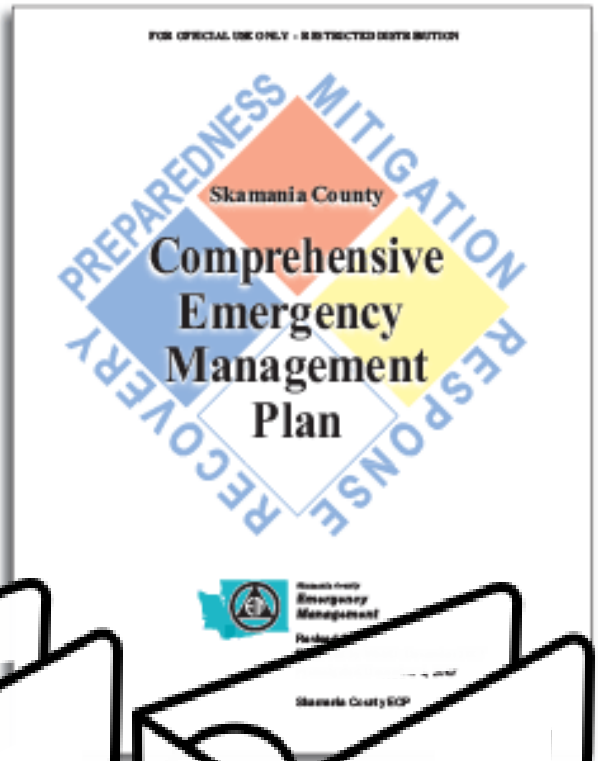


Path to Conceiving Cascadia Rising

- Increased awareness of the CSZ threat
- Subduction zone earthquakes: 2004, 2011
- WA Earthquake exercises: 2008, 2012
- Department of Defense earthquake exercises: 2014 (AK), 2015 (CA)
- State and Federal catastrophic plan development


56
20
50


EMERGENCY RESPONSE PLAN
PREPARE - RESPOND - RECOVER


FOR OFFICIAL USE ONLY - RESTRICTED DISTRIBUTION
PREPAREDNESS
MITIGATION
RESPONSE
RECOVERY
Skamania County
Comprehensive
Emergency
Management
Plan


NATIONAL GUARD
ALWAYS READY ALWAYS THERE
CSZ RESPONSE
THE SEAL OF THE STATE OF WASHINGTON 1889
CSZ RESPONSE
FEMA
CSZ RESPONSE
UNITED STATES
NORTHERN COMMAND
CSZ RESPONSE

Cascadia Rising 2016 Exercise

June 7-10, 2016

- **Enhance Disaster Response Joint-Operations** – test the local, state, tribal, and federal government as well as select private sector and non-governmental organizations' ability to jointly respond to a Cascadia Subduction Zone 9.0M earthquake and tsunami with associated aftershocks along the West Coast of the United States
- **Prepare for a Level-1 catastrophic earthquake disaster** – link together Emergency Operations Centers (EOCs) throughout the Pacific Northwest to coordinate and mimic all facets of a complex, wide-area, response to a catastrophic disaster.

FEMA

Responding to a Disaster

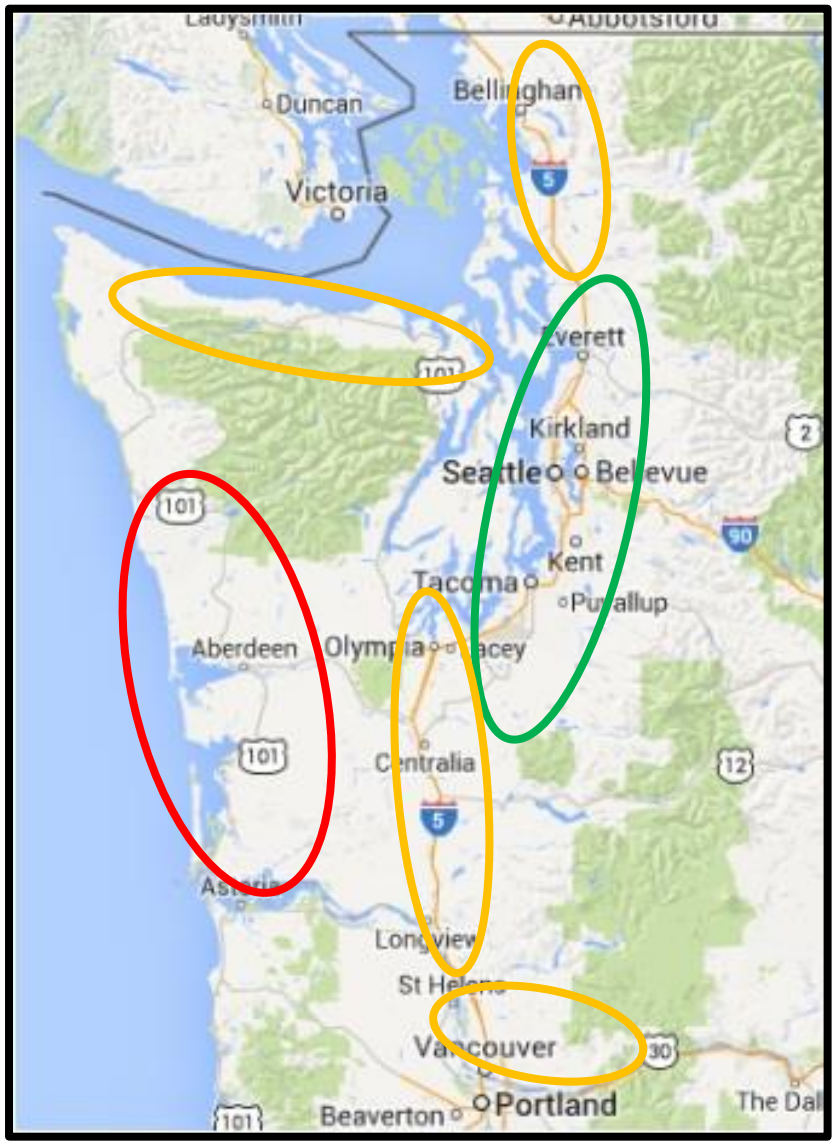
Emergency Management Priorities:

1. Establish communications
2. Search and rescue/security
3. Meet basic human needs
4. Restore critical infrastructure
5. Open schools and local businesses
6. Begin recovery





Planning Framework



LARGEST RESPONSE

Majority of Urban Search and Rescue (SAR)
Majority of ground distribution capability (Largest population)
- More people, less vehicles (Most stuff)
- Most civilian assistance
Limited Aerial Distribution (Rotary Wing)
Majority of Security Force capability
Level III Medical capability
Large scale evacuation capability
Minimal Route Clearance effort
- Most civilian assistance

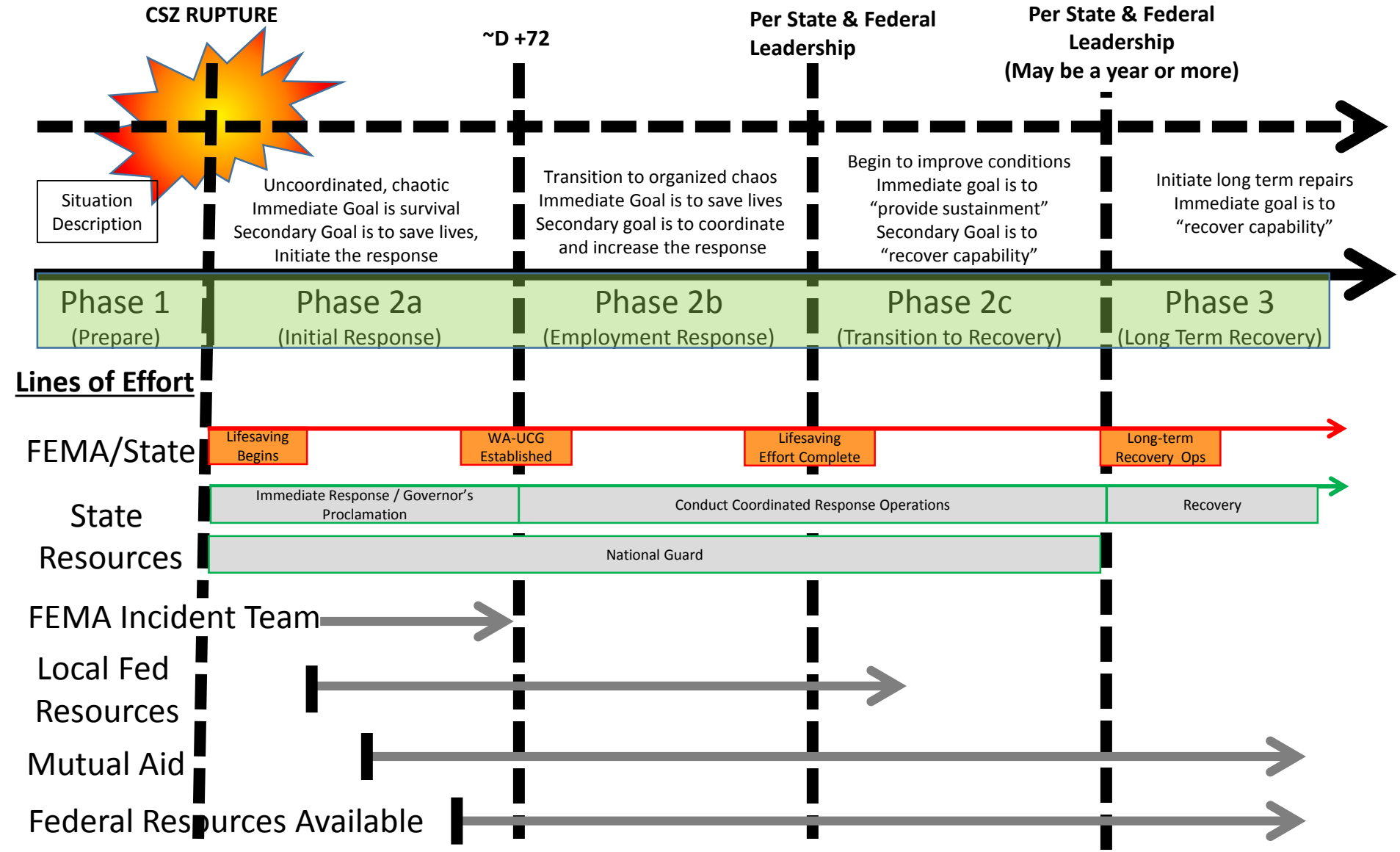
MOST CRITICAL

Majority of Aerial Search and Rescue (SAR)
Majority of Aerial distribution (Rotary Wing)
Limited ground distribution capability (Smallest population)
- Less vehicles, less people (Least stuff)
- Least civilian assistance
Limited Security Force capability
Level I and II Medical capability
Moderate evacuation capability
Maximum Route Clearance effort
- Least civilian assistance

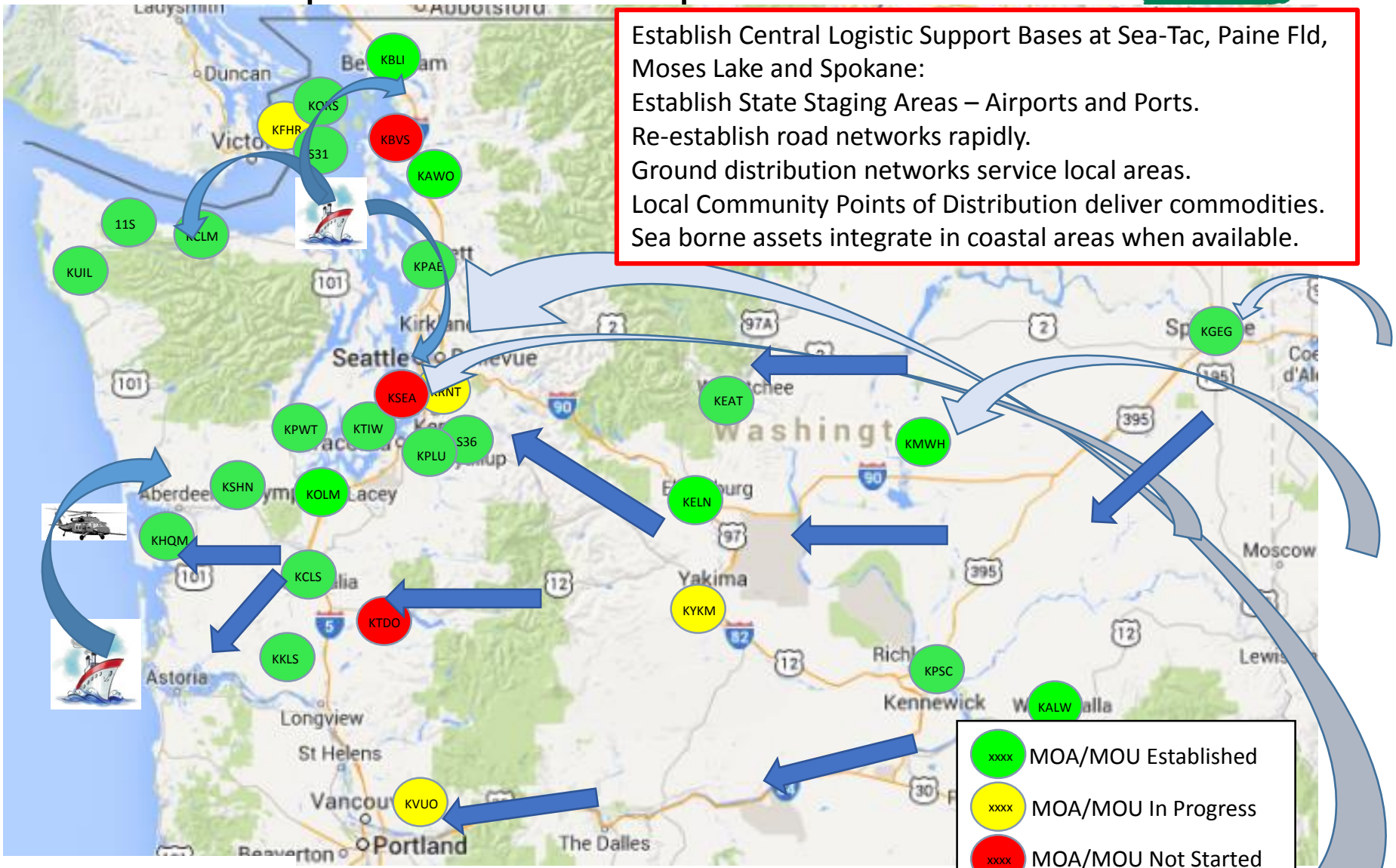
MOST SPREAD OUT

Minimal Urban Search and Rescue (SAR)
Moderate ground distribution capability (Significant population)
- More vehicles, less people (Medium stuff)
Limited Aerial Distribution (Rotary Wing)
Moderate Security Force capability
Level I and II Medical capability
Minimal evacuation capability
Minimal Route Clearance effort
- Significant civilian assistance

FEMA Phases-State Response



Initial Response Concept



Current as of: 18 Dec 2015

Exercise Focus: Coordination and Resources



FEMA National



COUNTY/ CITY/ TRIBAL EOCs



STATE AGENCIES Coordination Centers

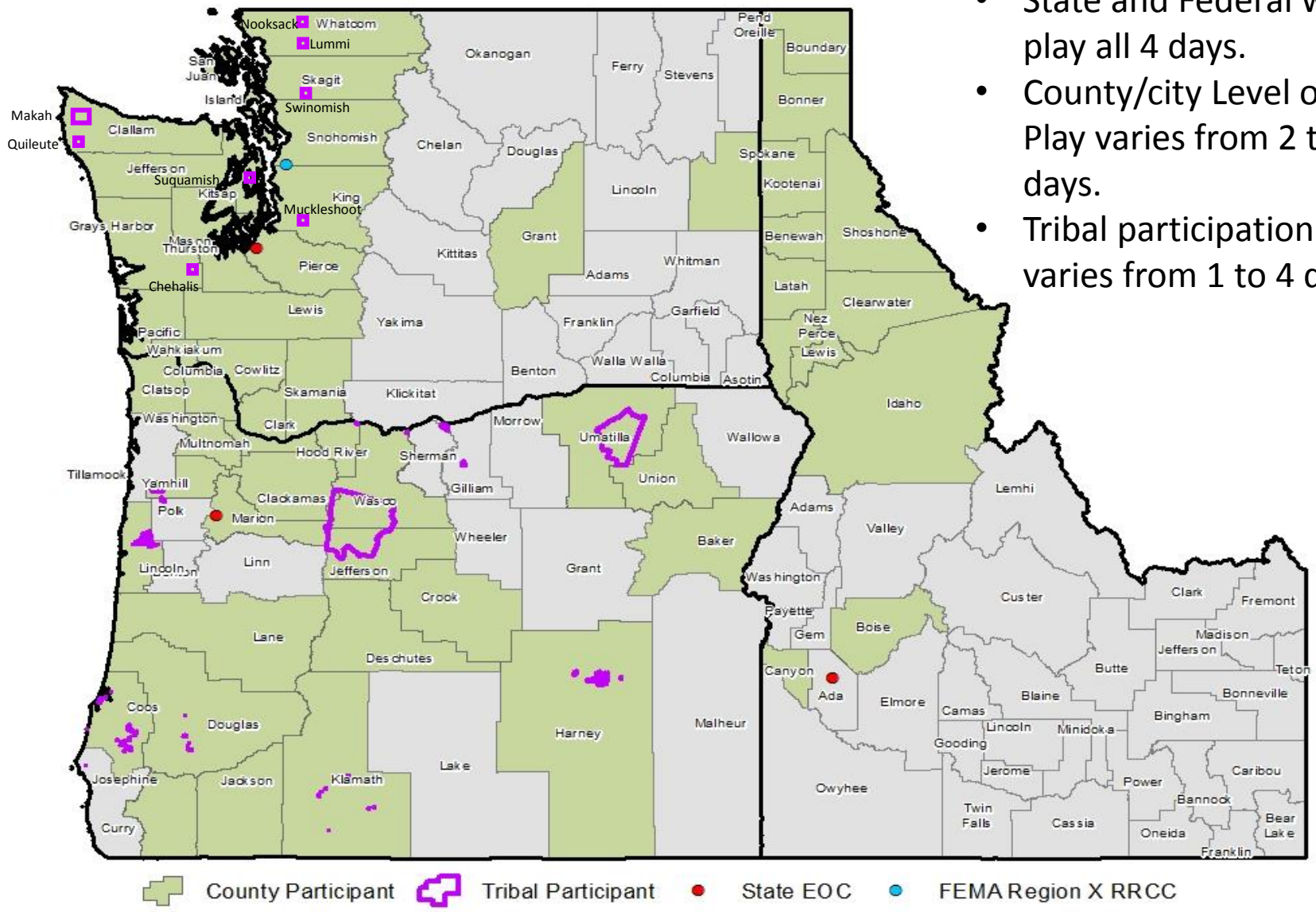


STATE EOC Initial Operating Facility



Military Operations Center

Participants



Extent of Play

- State and Federal will play all 4 days.
- County/city Level of Play varies from 2 to 4 days.
- Tribal participation varies from 1 to 4 days

Participants - Washington State Agencies

ESF	STATE AGENCY LEAD
ESF 1 - Transportation	WSDOT –Transportation
ESF 2 - Communications	WATECH – Technical Services
ESF 4 – Firefighting	DNR – Natural Resources
ESF 6 – Mass Care/Human Services	DSHS – Social and Health Services
ESF 7 – Resource Support	DES – Enterprise Services
ESF 8 – Public Health/Medical Services	DOH - Health
ESF 10 - Hazmat	ECOL - Ecology
ESF 11 - Agriculture	AGR - Agriculture
ESF 12 - Energy	COM - Commerce
ESF 13 – Public Safety	WSP – State Patrol
ESF 20 – Defense Support	WAANG – National Guard

An International Catastrophe
National & Canadian Participants



Linked Exercises

Linked Exercises

Ardent Sentry

Vigilant Guard

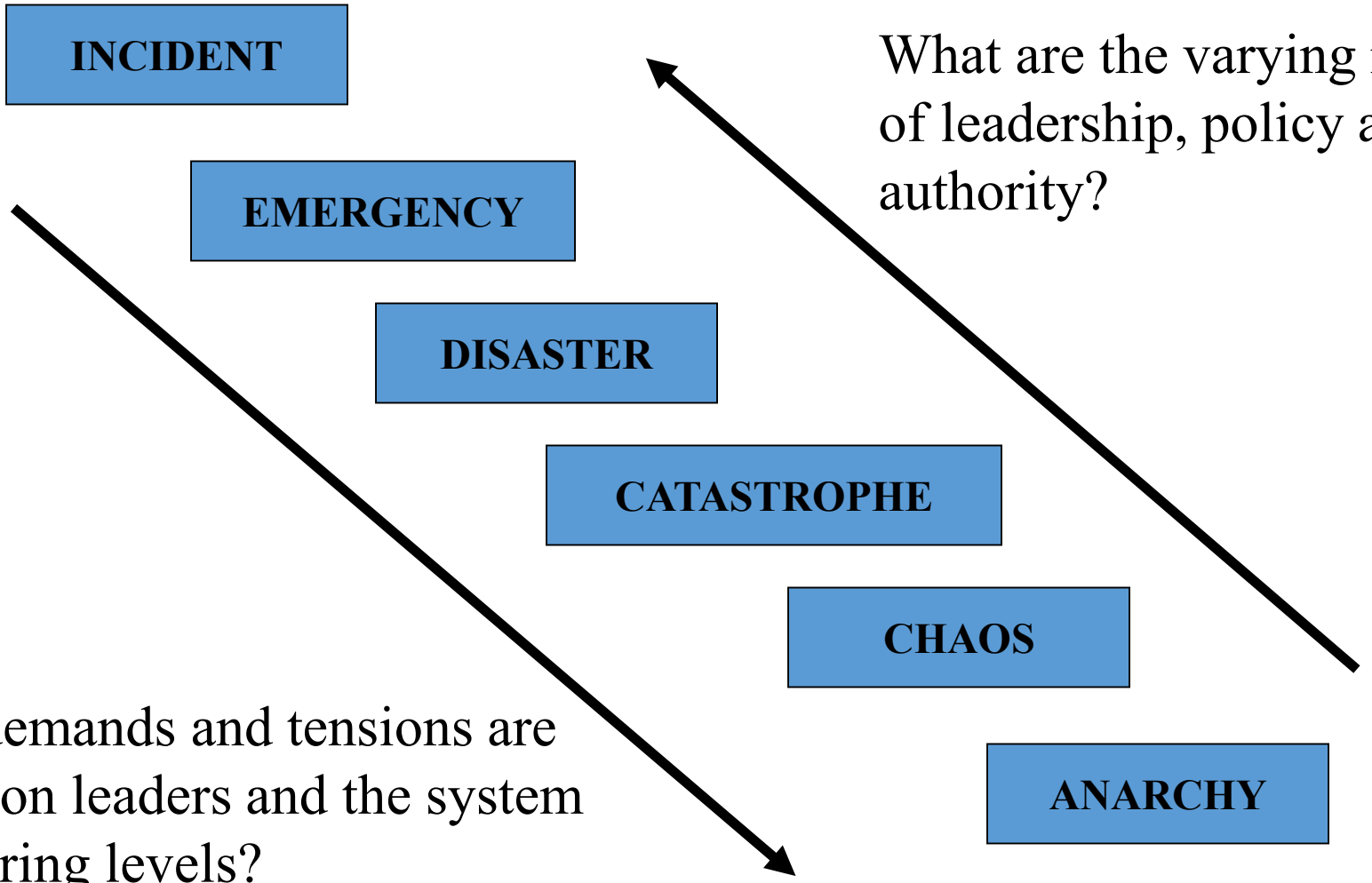
Turbo Challenge

Joint Logistics Over The Shore



Coastal Response

The Suiter Scale – Considering how to deal with multiple, simultaneous orders of magnitude.



Regional Objectives



1. **Operational Communications**

Demonstrate the ability of Emergency Operations Centers (EOCs) to establish and sustain voice and data communications with other EOCs and with the general public to include basic restoration of communications infrastructure within the impacted area to support response operations and coordinated public messaging.

2. **Public Health and Medical Services**

Demonstrate the ability to organize, coordinate, and deliver targeted public health and medical services to disaster survivors to include temporary medical facilities, medical surge operations, and patient evacuation and transport to save lives and reduce the suffering of disaster survivors.

3. **Mass-Care Services**

Demonstrate the ability to coordinate and deliver life-sustaining services to disaster survivors with a focus on hydration, feeding, emergency sheltering, evacuations, and donations and volunteer management.

Regional Objectives



4. **Situational Assessment**

Demonstrate the ability of EOCs at all levels to provide decision-makers and EOC officials with relevant information regarding the extent of disaster damages to critical infrastructures and other facilities, cascading effects, and the status of ongoing response operations and share this information with other EOCs and critical stakeholders.

5. **Critical Transportation**

Demonstrate the ability of EOCs to coordinate the establishment of access into impacted areas via appropriate ground, air, and maritime transportation corridors to deliver response teams, equipment, and disaster relief supplies to meet the basic needs of disaster survivors and stabilize the incident.

6. **Operational Coordination**

Demonstrate the ability to establish operational control and coordination structures within the impacted region to include the mobilization, employment, and sustainment of critical internal and external response resources to meet basic survivor needs and stabilize the incident.

Exercise Planning Team

Steering Committee Co-Leads

Washington Military Department

Emergency Management Division

Trusted Agents

Cities	Counties	State Agencies	Federal Agencies	Tribal Nations	Private Sector	NGOs

Exercise Design Sub-working Groups

- Design & Control
- Scenario and Ground Truth
- Evaluation
- External Affairs
- Training

Core Capability Subcommittees

- Operational Communications
- Critical Transportation
- Operational Coordination
- Situational Assessment
- Public Health and Medical Services
- Mass-Care Services

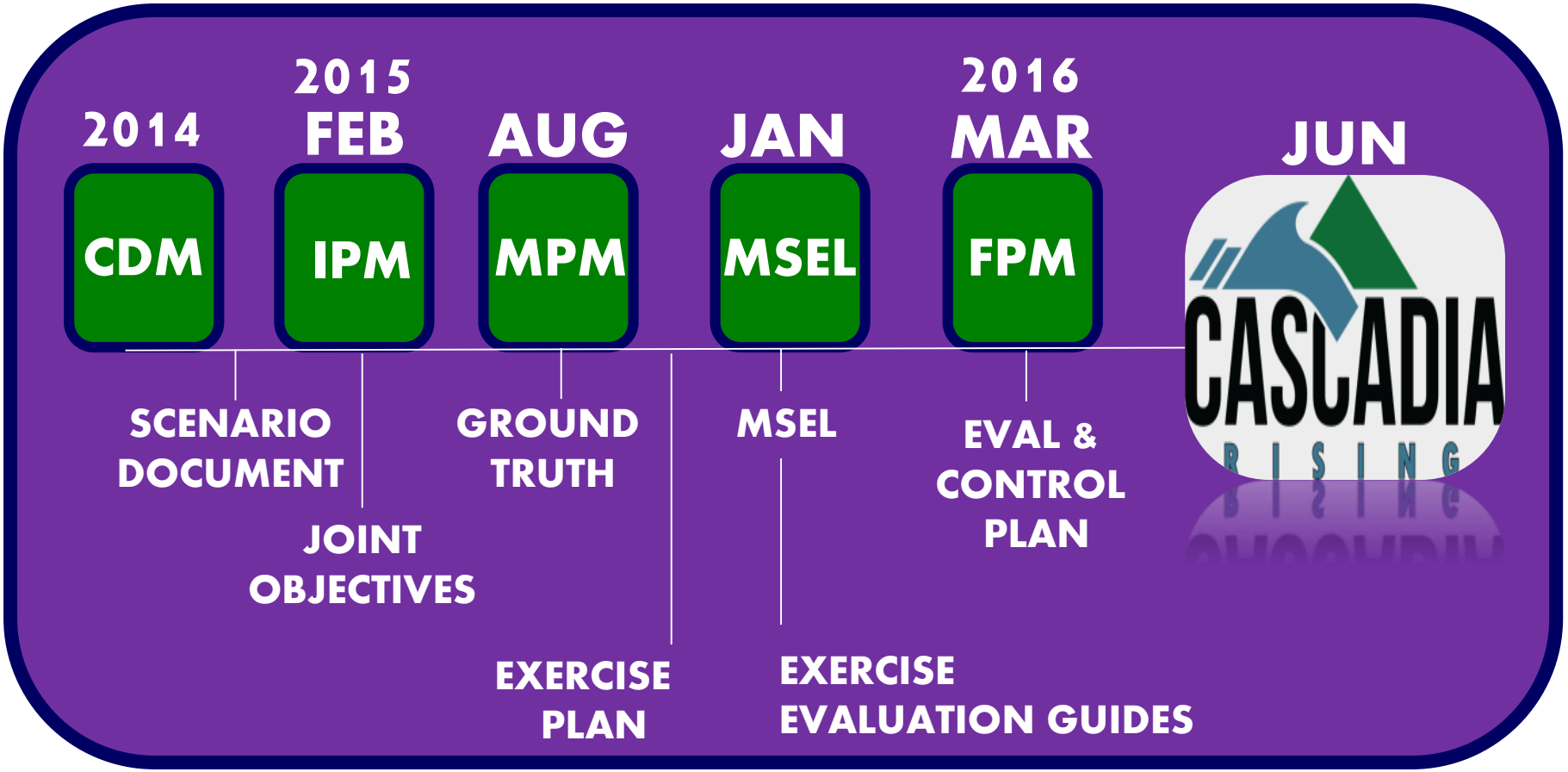
Exercise Planning Team



Exercise Planning Team



Exercise Planning



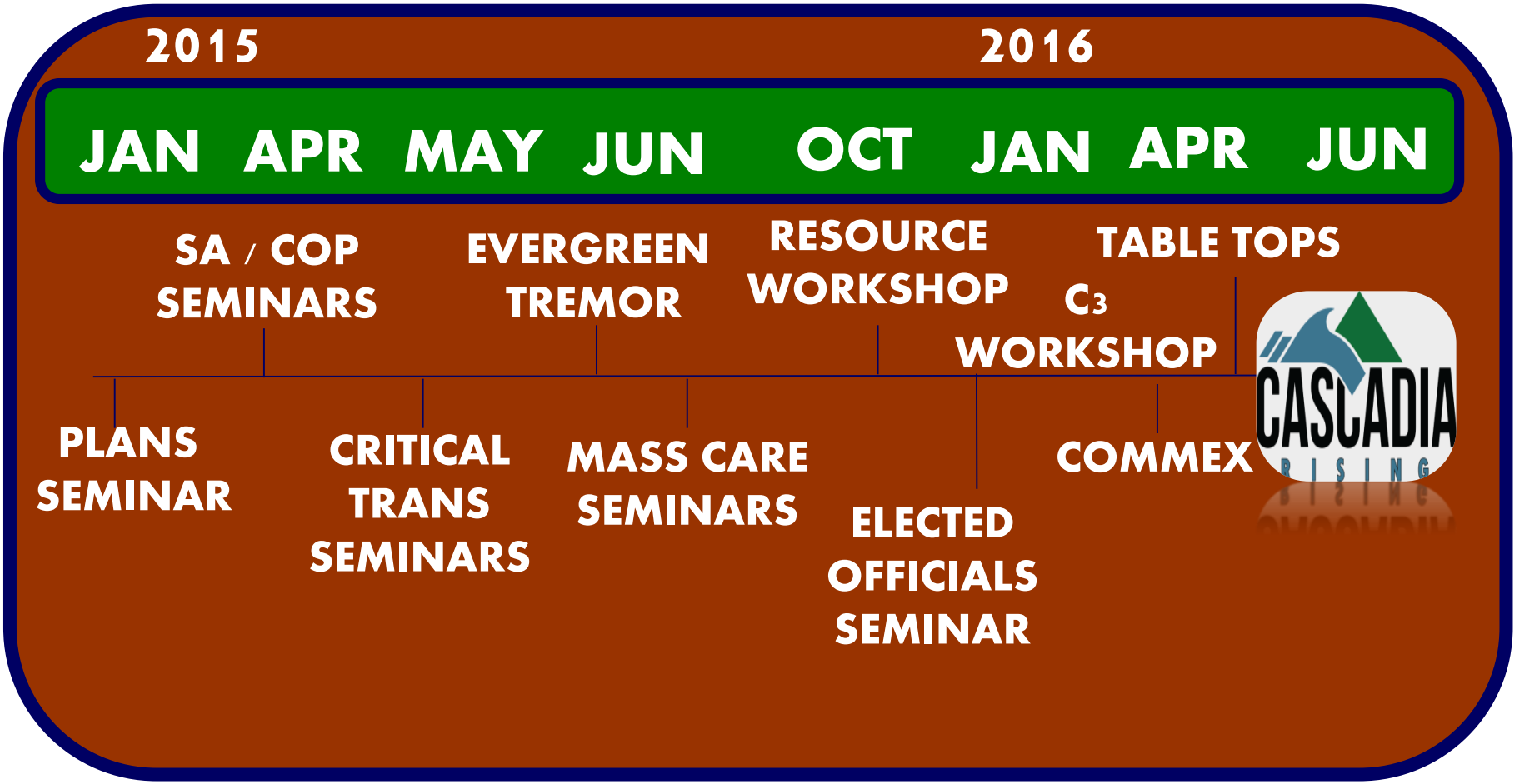
Cascadia Rising 2016 Exercise

- A two-year ramp-up underway
  - *We are already exercising Cascadia Rising* through a series of state-wide workshops, seminars, and courses to educate participating organizations and share best practices
- Feedback to catastrophic planning efforts
  - The ramp-up events and four day exercise are enabling planners to engage the whole community on our catastrophic plans, identify gaps and shortfalls, and refine those plans.

Lead-Up Training and Exercises



Regional Ramp-Up Seminars / Exercises



CASCADIA RISING

Simulating a disaster for Players



Master Scenario Events List (MSEL)

Injects:

- The backbone of a successful exercise!
- The MSEL links simulation to action and reflects each inject or event that will prompt players to implement the plan or procedure being validated.
- Acronyms are bad

Link Injects to the Ground Truth. Intended to provide a detailed account of the damages that have occurred following the scenario earthquake and tsunami. Coordinating inject development with the Ground Truth document is vital for providing a COP.

Joint Objectives as the foundation. The Overarching Objectives and the Joint Exercise Objectives should inform the development of the majority of exercise injects. Injects do not need to be exclusively focused on meeting the Overarching Objectives – they can support local objectives as well - but they should be disproportionately oriented towards testing the Joint Objectives.

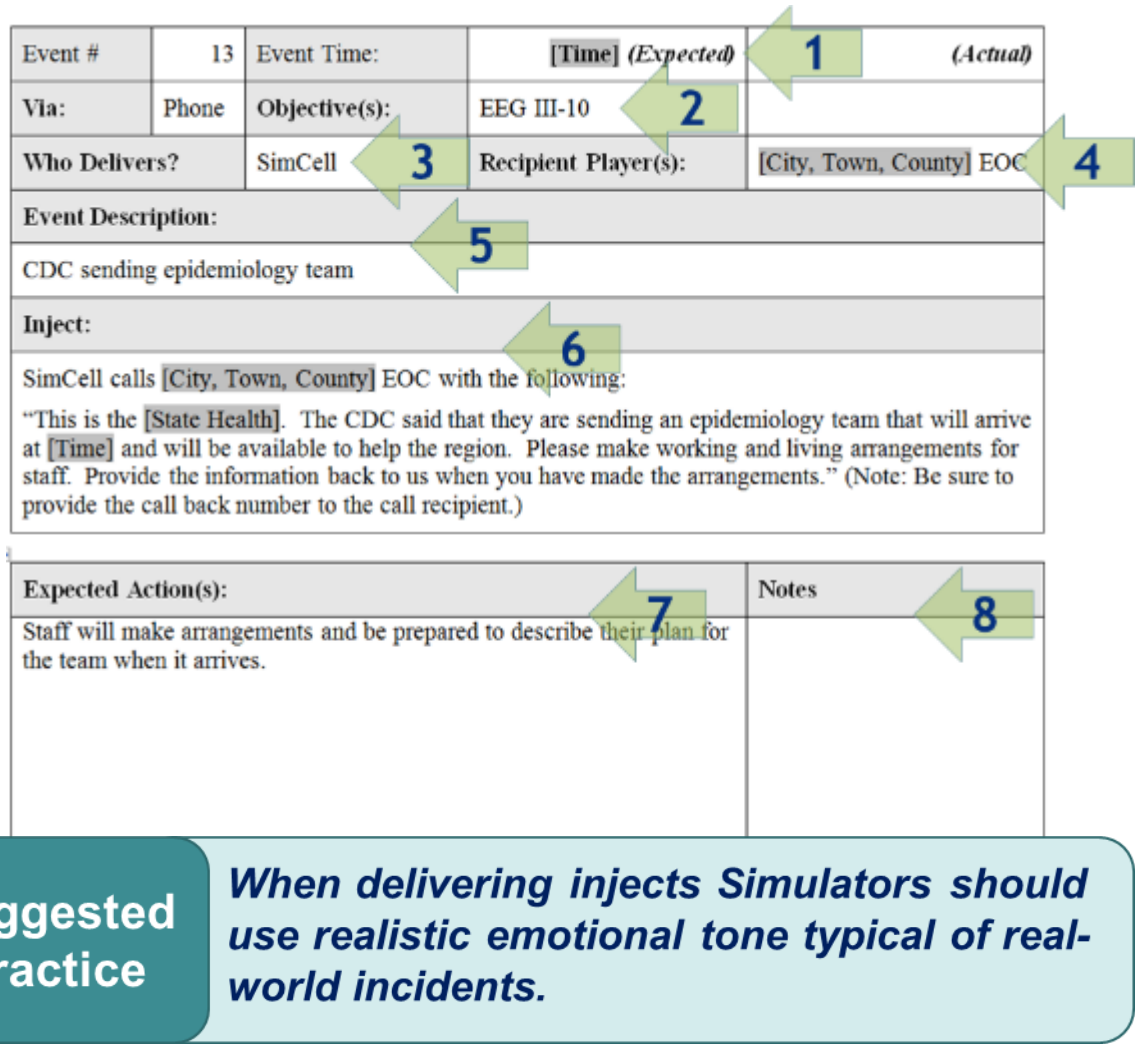
Types of Injects

- **Contextual injects** are introduced to a player by a controller to help set the exercise operating environment. These are often damage reports from 'the field' on what is broken. Based on info from the 'Ground Truth'.
- **Request-for-support injects** are requests from 'the field' asking for assistance – e.g., personnel, teams, equipment, supplies, etc.
- **Expected action events** reserve a place in the MSEL timeline and notify controllers of when a response action would typically take place.
- **Contingency injects** are events that a controller verbally indicates to a player if they do not physically take place. This ensures that play moves forward, as needed, to adequately evaluate performance of activities.
- **Ad hoc injects** are events developed during the exercise to push specific player action.

See example 'problem' injects handout

Elements of an Inject

1. Designated scenario time
2. Objective to be demonstrated
3. Controller responsible for delivering inject
4. Intended player
5. Event description
6. Inject
7. Expected action (player response)
8. Notes section



Event #	13	Event Time:	[Time] *(Expected)* 1	*(Actual)*
Via:	Phone	Objective(s):	EEG III-10 2	
Who Delivers?		SimCell 3	Recipient Player(s):	[City, Town, County] EOC 4
Event Description: 5				
CDC sending epidemiology team				
Inject: 6				
SimCell calls [City, Town, County] EOC with the following: "This is the [State Health]. The CDC said that they are sending an epidemiology team that will arrive at [Time] and will be available to help the region. Please make working and living arrangements for staff. Provide the information back to us when you have made the arrangements." (Note: Be sure to provide the call back number to the call recipient.)				

Expected Action(s): 7	Notes 8
Staff will make arrangements and be prepared to describe their plan for the team when it arrives.	

Suggested Practice

When delivering injects Simulators should use realistic emotional tone typical of real-world incidents.







Event #	13	Event Time:	[Time] *(Expected)*	*(Actual)*
Via:	Phone	**Objective(s):**	EEG III-10	
Who Delivers?		SimCell	**Recipient Player(s):**	[City, Town, County] EOC
Event Description:				
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Expected Action(s):	Notes
Staff will make arrangements ar the team when it arrives.	
Expected Outcome:	





Challenges & Food for Thought

- While we can prepare, we will never be prepared
- One single exercise will not suffice
- Size and complexity of the exercise
- Limitation of scope / scope creep during design
- Exercise artificialities
- Exercise vs reality
- Simultaneous functional and full scale exercises
- Managing expectations
- Proofing concepts vs exercising trained plans and procedures



CASCADIA RISING

Questions?